What is claimed is:

1.   A color correction method for correcting the colors of photographic images represented by image data, said image data defining color values, comprising the steps of:

a)   providing a set of distributions of color values in a color space,

b)   selecting one or more reference parts of the image to be corrected, each of said one or more reference parts having at least one color value;

c)   assigning one of said set of distributions to each selected reference part of said one or more reference parts;

d)   determining a transformation for transforming the at least one color value of the one or more reference parts such that the transformed at least one color value at least approximately matches the color values of the one or more assigned distributions or matches the color values of those distributions better than the at least one untransformed color value; and

e)   transforming the color values of the image data by means of the determined transformation to achieve a corrected image.

2.   The color correction method of claim 1, wherein the steps of b) selecting, c) assigning, d) determining and e) transforming are repeated based on the uncorrected image data which represent the image to be corrected.

3.   The color correction method of claim 1, wherein, during said repetition, reference parts selected in one or more previous steps b) and in a current step b) and reference colors assigned in one or more previous steps c) and in a current step c) are used for the determination of the transformation in a current step d).

4.   The color correction method of any of claim 1, wherein, in case of a plurality of reference parts, the matching is performed in accordance with an optimisation process which evaluates a total matching degree between the transformed color values and the color values of the assigned distributions for the plurality of reference parts and which determines the transformation such that a function describing the total matching degree

is optimized, said function mathematically combining matching degrees for the respective reference parts and the respectively assigned distributions.

5.   The color correction method of claim 1, wherein said distributions define a probability of color values to represent a reference color and wherein said matching is optimized based on said probability.

6.   The color correction method of claim 1, wherein said distributions express reference color probabilities ($p(a, b \mid A_k)$) that the at least one color values of the one or more reference parts represents a realisation of a reference color which corresponds to one of said set of distributions and wherein said transformation is performed such that a probability of said matching is optimized.

7.   The color correction method of claim 6, wherein the determination of the transformation in step d) is based on both the reference color probability and a distribution which expresses the prior knowledge in accordance with Bayes' rule.

8.   The color correction method of claim 7, wherein the determination of the transformation in step d) is made by means of a hypothesis, which represents the transformation, and by calculating a reference color likelihood ($p(D/\theta)$) based on at least one of said reference color probabilities ($p(a, b \mid A_k)$), said likelihood representing the likelihood of the hypothesis given the at least one color value to be corrected, the one or more selected reference parts, and the one or more assigned distributions.

9.   The color correction method of claim 8, wherein the transformation is determined by evaluating the maximum for a posterior probability ($p(\theta/D)$) which expresses the probability of the hypothesis given the at least one color value to be corrected, the one or more selected reference parts, and the one or more assigned distributions, said posterior probability being calculated based on both the reference color likelihood and the prior knowledge which expresses the knowledge about the probability of the hypothesis

before the at least one color value to be corrected, the one or more selected reference parts and the one or more assigned distributions were known.

10. The color correction method of claim 1, wherein an algorithm, which analyses the spatial information included in the image data, is used to select reference parts of the image and to assign distributions to those reference parts, wherein the algorithm analyses only luminance information included in the color values of the image data and wherein the color correction corrects only color hue and/or color saturation information included in the color values of the image data.

11. The color correction method of claim 1, wherein the color values of the image data and the color values of the distributions are present in different color spaces and wherein said transformation determined in step d) comprises a color space transformation as a result of which the color values transformed by the transformation and the color values of the distributions are in the same color space.

12. The color correction method of claim 1, wherein the transformation is determined in step d) such that the transformation comprises a color management transformation, said color management transformation modelling the manipulation of the color values of the image data by an output device into which the image data, which result from the color value transformation in step e), are to be input.

13. The color correction method of claim 1, wherein the transformation is determined in step d) such that the transformation comprises a color appearance transformation, said color appearance transformation modelling the perception of the color values of the image data by a human being, who perceives the image data, which result from the color value transformation in step e) and which are output by an output device of predefined color value manipulation references.

14. A photographic image processing device which digitally processes photographic images for correcting the colors of digital photographic images, comprising:

a)   a provisioning unit which provides a set of distributions of color values in a color space,

b)   a receiving unit which receives digital image data representing a photographic image by means of color values;

c)   a selecting unit which selects one or more reference parts of the image, each of said one or more reference parts having at least one color value;

d)   an assignment unit which assigns one of said set of distributions to each selected reference part of said one or more reference parts;

e)   a determination unit which determines a transformation for transforming the at least one color value of the one or more reference parts such that the transformed at least one color value at least approximately matches the color values of the one or more assigned distributions or matches the color values of those distributions better than the at least one untransformed color value; and

f)   a transforming unit which transforms the color values of the image data by means of the determined transformation to achieve a corrected image.